

SEQUENCE LISTING

<110> Tsukahara, Kappei
 Tsuchiya, Mamiko
 Jigami, Yoshifumi
 Nakayama, Kenichi
 Umemura, Mariko
 Okamoto, Michiyo

<120> METHOD OF SCREENING FOR COMPOUNDS THAT
 INHIBIT THE ENZYMATIC ACTIVITY OF GWT1 GENE PRODUCT

<130> 082368-004400US

<140> 10/536,935

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<150> PCT/JP03/14909

<151> 2003-11-21

<150> JP 2002-339418

<151> 2002-11-22

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<212> DNA

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gca gtg aca tca att gct ttg gta act tac ata tca tgg aac tta ttg	144
Ala Val Thr Ser Ile Ala Leu Val Thr Tyr Ile Ser Trp Asn Leu Leu	
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Lys Asn Ser Asn Leu Met Pro Pro Gly Ile Ser Ser Val Gln Tyr Ile	
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Tyr Ala Ser Glu Pro Tyr Leu Leu Asn Thr Leu Ile Leu Leu Pro Cys	

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Cys Leu Thr Asp Lys Ile Phe Gly Asn Ser Ser Glu Tyr Tyr Lys Val	
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35 40 45

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 Ile Asp Phe Ala Leu Asn Trp Val Ala Leu Leu Leu Ser Ile Thr Ile
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 Asn Pro Ile Tyr Asn Lys Lys Lys Met Ile Thr Gln Arg Phe Gln Leu
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 Glu Lys Lys Pro Tyr Ile Thr Ala Tyr Arg Gly Gly Met Leu Ile Leu
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 Asn Ala Leu Lys Ser Gly Gly Thr Leu Leu Phe Leu Gly Leu Leu Arg
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 225 230 235 240
 Gly Val His Trp Asn Phe Phe Ile Thr Leu Ser Leu Leu Pro Leu Val
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 Arg Thr Leu Asn Phe Leu Ile Leu Ala Asp Arg Asn Cys Phe Phe Ser
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 420 425 430
 Ala Glu Cys Leu Glu Ser Ile Asn Ser Asn Gly Leu Phe Leu Phe Leu
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 Asp Ser Ser Pro Leu Lys Ser Phe Leu Val Leu Leu Ala Tyr Cys Ser
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 Ala Leu Ile Tyr Asp Tyr Ile Leu Asn Val Leu Thr Ile Leu Ala Ser
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 65 70 75 80
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 Ile Pro Ser Leu Val Ile Tyr Leu Val Asn Tyr His Val Glu Lys Pro
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Phe Leu Pro Ile Val Leu Gly Ile Leu Asp Pro Val Leu Asn Leu Val	
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Leu Asn Lys Thr Gly Leu Leu Lys Phe Ile Leu Ser Ser Glu Asn Arg	
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Leu Thr Gly Tyr Lys Thr Lys Asn Asn Leu Ile Thr Ile Ser Lys Ile	
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Arg Ile Ser Lys Lys Gln His Lys Lys Glu Leu Leu Leu Phe Phe Ser	
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385 390 395 400	
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 Ala Leu Ile Tyr Asp Tyr Ile Leu Asn Val Leu Thr Ile Leu Ala Ser
 50 55 60
 Ile Thr Val Tyr Ser Asn Ser Pro Ser Tyr Leu His Tyr Phe Ile Val

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385 390 395 400

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Asn Thr Leu Glu Thr Ser Asn Lys Met Ala Val Ile Ile Leu Ile Gly
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 65 70 75 80

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 Ile Pro Ser Leu Val Ile Tyr Leu Val Asn Tyr His Val Glu Lys Pro
 85 90 95

tct tca ccc cat aga caa aat gat aca aaa gaa gat aaa tcg gac gaa 336
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Arg	Arg	Phe	Ala	Lys	Val	Glu	Thr	Trp	Gly	Thr	Ser	Met	Met	Asp	Leu			
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Leu	Ile	Lys	Asn	His	Thr	Asp	Asn	Tyr	Lys	Phe	Ser	Trp	Lys	Ser	Tyr			
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ttg	aaa	aca	atc	aag	cag	aac	ttt	atc	aag	tca	gtg	cct	ata	ctt	gtt	624		
Leu	Lys	Thr	Ile	Lys	Gln	Asn	Phe	Ile	Lys	Ser	Val	Pro	Ile	Leu	Val			
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Leu	Gly	Ala	Ile	Arg	Phe	Val	Ser	Val	Lys	Gln	Leu	Asp	Tyr	Gln	Glu			
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cac	gaa	aca	gag	tat	gga	atc	cat	tgg	aat	ttt	ttc	ttc	aca	tta	ggg	720		
His	Glu	Thr	Glu	Tyr	Gly	Ile	His	Trp	Asn	Phe	Phe	Phe	Thr	Leu	Gly			
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ttc	ttg	cca	att	gta	ttg	gga	ata	tta	gac	ccg	gtg	ttg	aat	ttg	gtt	768		
Phe	Leu	Pro	Ile	Val	Leu	Gly	Ile	Leu	Asp	Pro	Val	Leu	Asn	Leu	Val			
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cca	cgc	ttc	ata	ata	gga	att	ggt	atc	tca	att	ggt	tat	gag	gta	gcg	816		
Pro	Arg	Phe	Ile	Ile	Gly	Ile	Gly	Ile	Ser	Ile	Gly	Tyr	Glu	Val	Ala			
260						265						270						
ttg	aat	aag	act	ggt	ttg	ttg	aag	ttc	att	ttg	agc	agc	gaa	aac	aga	864		
Leu	Asn	Lys	Thr	Gly	Leu	Leu	Lys	Phe	Ile	Leu	Ser	Ser	Glu	Asn	Arg			
275						280						285						
ctt	gaa	tct	ctc	atc	gcc	atg	aat	aaa	gaa	ggt	att	ttt	tcg	ttt	att	912		
Leu	Glu	Ser	Leu	Ile	Ala	Met	Asn	Lys	Glu	Gly	Ile	Phe	Ser	Phe	Ile			
290						295						300						
gga	tat	ctt	tgt	att	ttt	ata	att	ggt	cag	tct	ttt	ggg	tca	ttt	gtt	960		
Gly	Tyr	Leu	Cys	Ile	Phe	Ile	Ile	Gly	Gln	Ser	Phe	Gly	Ser	Phe	Val			
305						310						315						320
tta	aca	ggc	tac	aaa	aca	aag	aac	aac	tta	ata	acc	att	agc	aaa	att	1008		
Leu	Thr	Gly	Tyr	Lys	Thr	Lys	Asn	Asn	Leu	Ile	Thr	Ile	Ser	Lys	Ile			
325						330						335						
cgt	att	tca	aaa	aaa	caa	cac	aag	aaa	gag	ctg	ctg	ctg	ttt	ttc	tca	1056		
Arg	Ile	Ser	Lys	Lys	Gln	His	Lys	Lys	Glu	Leu	Leu	Leu	Phe	Phe	Ser			
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gtc	gcc	act	act	cag	gga	tta	tat	ttg	gca	tgt	atc	ttc	tat	cac	tta	1104		
Val	Ala	Thr	Thr	Gln	Gly	Leu	Tyr	Leu	Ala	Cys	Ile	Phe	Tyr	His	Leu			
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gct ttc agt ttg ttc atc agc aac tta tca ttc ttg caa cca att tca 1152
 Ala Phe Ser Leu Phe Ile Ser Asn Leu Ser Phe Leu Gln Pro Ile Ser
 370 375 380

aga cga ttg gcc aat ttc ccc tac gtc atg tgg gtc gtt tcg tac aat 1200
 Arg Arg Leu Ala Asn Phe Pro Tyr Val Met Trp Val Val Ser Tyr Asn
 385 390 395 400

gct acg ttt tta tta tgt tat gac tta att gaa aaa ttt atc ccg ggg 1248
 Ala Thr Phe Leu Leu Cys Tyr Asp Leu Ile Glu Lys Phe Ile Pro Gly
 405 410 415

aac ctt act tct act gta ttg gac tct att aat aac aat ggt tta ttt 1296
 Asn Leu Thr Ser Thr Val Leu Asp Ser Ile Asn Asn Asn Gly Leu Phe
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 Ile Phe Leu Val Ser Asn Leu Leu Thr Gly Phe Ile Asn Met Ser Ile
 435 440 445

aac act ttg gaa act agc aat aaa atg gca gtg att atc ttg att ggc 1392
 Asn Thr Leu Glu Thr Ser Asn Lys Met Ala Val Ile Ile Leu Ile Gly
 450 455 460

tat agt ctt act tgg aca ttg ctc gcc tta tat ttg gat aag agg aag 1440
 Tyr Ser Leu Thr Trp Thr Leu Leu Ala Leu Tyr Leu Asp Lys Arg Lys
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atc tac atc aag ctt tag 1458
 Ile Tyr Ile Lys Leu
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Ser Ser Tyr Leu Ser Phe Arg Leu Leu Lys Lys Ser Leu Gly Asp Leu
 35 40 45

Ala Leu Ile Tyr Asp Tyr Ile Leu Asn Val Leu Thr Ile Leu Ala Ser
 50 55 60

Ile Thr Val Tyr Ser Asn Ser Pro Ser Tyr Leu His Tyr Phe Ile Val
 65 70 75 80

Ile Pro Ser Leu Val Ile Tyr Leu Val Asn Tyr His Val Glu Lys Pro
 85 90 95

Ser Ser Pro His Arg Gln Asn Asp Thr Lys Glu Asp Lys Ser Asp Glu
 100 105 110

Leu Leu Pro Arg Lys Gln Phe Ile Thr Ala Tyr Arg Ser Gln Met Leu
 115 120 125
 Ile Ile Thr Asn Leu Ala Ile Leu Ala Val Asp Phe Pro Ile Phe Pro
 130 135 140
 Arg Arg Phe Ala Lys Val Glu Thr Trp Gly Thr Ser Met Met Asp Leu
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 Gly Val Gly Ser Phe Val Phe Ser Met Gly Leu Ala Asn Ser Arg Gln
 165 170 175
 Leu Ile Lys Asn His Thr Asp Asn Tyr Lys Phe Ser Trp Lys Ser Tyr
 180 185 190
 Leu Lys Thr Ile Lys Gln Asn Phe Ile Lys Ser Val Pro Ile Leu Val
 195 200 205
 Leu Gly Ala Ile Arg Phe Val Ser Val Lys Gln Leu Asp Tyr Gln Glu
 210 215 220
 His Glu Thr Glu Tyr Gly Ile His Trp Asn Phe Phe Phe Thr Leu Gly
 225 230 235 240
 Phe Leu Pro Ile Val Leu Gly Ile Leu Asp Pro Val Leu Asn Leu Val
 245 250 255
 Pro Arg Phe Ile Ile Gly Ile Gly Ile Ser Ile Gly Tyr Glu Val Ala
 260 265 270
 Leu Asn Lys Thr Gly Leu Leu Lys Phe Ile Leu Ser Ser Glu Asn Arg
 275 280 285
 Leu Glu Ser Leu Ile Ala Met Asn Lys Glu Gly Ile Phe Ser Phe Ile
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 Gly Tyr Leu Cys Ile Phe Ile Ile Gly Gln Ser Phe Gly Ser Phe Val
 305 310 315 320
 Leu Thr Gly Tyr Lys Thr Lys Asn Asn Leu Ile Thr Ile Ser Lys Ile
 325 330 335
 Arg Ile Ser Lys Lys Gln His Lys Lys Glu Leu Leu Leu Phe Phe Ser
 340 345 350
 Val Ala Thr Thr Gln Gly Leu Tyr Leu Ala Cys Ile Phe Tyr His Leu
 355 360 365
 Ala Phe Ser Leu Phe Ile Ser Asn Leu Ser Phe Leu Gln Pro Ile Ser
 370 375 380
 Arg Arg Leu Ala Asn Phe Pro Tyr Val Met Trp Val Val Ser Tyr Asn
 385 390 395 400
 Ala Thr Phe Leu Leu Cys Tyr Asp Leu Ile Glu Lys Phe Ile Pro Gly
 405 410 415
 Asn Leu Thr Ser Thr Val Leu Asp Ser Ile Asn Asn Asn Gly Leu Phe
 420 425 430
 Ile Phe Leu Val Ser Asn Leu Leu Thr Gly Phe Ile Asn Met Ser Ile

435 440 445
 Asn Thr Leu Glu Thr Ser Asn Lys Met Ala Val Ile Ile Leu Ile Gly
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 465 470 475 480

 Ile Tyr Ile Lys Leu
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 tca agt tcc att gag aca tgt ggc ttg tta tta ata gga att gct tgc 96
 Ser Ser Ser Ile Glu Thr Cys Gly Leu Leu Leu Ile Gly Ile Ala Cys
 20 25 30

 aac gtt ttg tgg gta aac atg act gcg aga aac atc tta ccc aaa ggg 144
 Asn Val Leu Trp Val Asn Met Thr Ala Arg Asn Ile Leu Pro Lys Gly
 35 40 45

 aat ctt ggg ttt ctt gtt gag ttt ttc atc ttt tgc tta att cca tta 192
 Asn Leu Gly Phe Leu Val Glu Phe Phe Ile Phe Cys Leu Ile Pro Leu
 50 55 60

 ttt gtc att tac gtt tca tcg aaa gtt ggc gtt ttc act ctt tgc ata 240
 Phe Val Ile Tyr Val Ser Ser Lys Val Gly Val Phe Thr Leu Cys Ile
 65 70 75 80

 gcc tct ttt ttg cct tcc ttc gtc ctt cat gtt ata agt cca att aat 288
 Ala Ser Phe Leu Pro Ser Phe Val Leu His Val Ile Ser Pro Ile Asn
 85 90 95

 tgg gat gtg ctg aga aga aaa cct ggt tgt tgt ctt act aaa aaa aat 336
 Trp Asp Val Leu Arg Arg Lys Pro Gly Cys Cys Leu Thr Lys Lys Asn
 100 105 110

 gaa aat act ttt gat cga cga att gct gga gtc aca ttt tat cgt tct 384
 Glu Asn Thr Phe Asp Arg Arg Ile Ala Gly Val Thr Phe Tyr Arg Ser
 115 120 125

 caa atg atg ttg gtt act gtc act tgc atc ctg gcc gtt gac ttt acc 432
 Gln Met Met Leu Val Thr Val Thr Cys Ile Leu Ala Val Asp Phe Thr
 130 135 140

 ctt ttc ccg agg aga tat gcc aaa gtt gaa acc tgg gga aca tca ctg 480
 Leu Phe Pro Arg Arg Tyr Ala Lys Val Glu Thr Trp Gly Thr Ser Leu

145	150	155	160	
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	165 170 175			
gga cgg aaa aat gac att aaa aaa cca aat gcg ttt aaa aat gta ttg	Gly Arg Lys Asn Asp Ile Lys Lys Pro Asn Ala Phe Lys Asn Val Leu	576		
	180 185 190			
tgg aat tct ttc atc ctt ttg att tta gga ttt gcg cgc atg ttt tta	Trp Asn Ser Phe Ile Leu Leu Ile Leu Gly Phe Ala Arg Met Phe Leu	624		
	195 200 205			
acg aaa agc atc aat tac caa gaa cat gta agc gaa tat ggc atg cat	Thr Lys Ser Ile Asn Tyr Gln Glu His Val Ser Glu Tyr Gly Met His	672		
	210 215 220			
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	225 230 235 240			
ttt cgt cgt tct tta aaa aaa gtc tcc tat ttt aat tta gca acc ttc	Phe Arg Arg Ser Leu Lys Lys Val Ser Tyr Phe Asn Leu Ala Thr Phe	768		
	245 250 255			
att act ctt ctt cat cat tgt ttg ctt gtt tta acc cct ttc caa aaa	Ile Thr Leu Leu His His Cys Leu Leu Val Leu Thr Pro Phe Gln Lys	816		
	260 265 270			
tgg gca cta tcc gcc ccc aga aca aat att ttg gct cag aat aga gag	Trp Ala Leu Ser Ala Pro Arg Thr Asn Ile Leu Ala Gln Asn Arg Glu	864		
	275 280 285			
ggt att gct tct ctt ccc gga tac att gct att tac ttt tat gga atg	Gly Ile Ala Ser Leu Pro Gly Tyr Ile Ala Ile Tyr Phe Tyr Gly Met	912		
	290 295 300			
tat acc ggt agt gta gtt ttg gct gat cga cct cta atg tat act aga	Tyr Thr Gly Ser Val Val Leu Ala Asp Arg Pro Leu Met Tyr Thr Arg	960		
	305 310 315 320			
gct gag tcg tgg aag cgc ttt caa cgt cta tta ttc ccg cta tgc att	Ala Glu Ser Trp Lys Arg Phe Gln Arg Leu Leu Phe Pro Leu Cys Ile	1008		
	325 330 335			
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	340 345 350			
cgc cga ctt gct aat acg cct tat gtt gcg aat gtt gcc ttt atc aat	Arg Arg Leu Ala Asn Thr Pro Tyr Val Ala Asn Val Ala Phe Ile Asn	1104		
	355 360 365			
atg ttt ttt ctt act ata tac ata ctt att gat gcc tat tta ttc cca	Met Phe Phe Leu Thr Ile Tyr Ile Leu Ile Asp Ala Tyr Leu Phe Pro	1152		
	370 375 380			
tct tct gtg cca tat gga agt cgc gtc ccc aaa ctg ctt gaa gat gcc	Ser Ser Val Pro Tyr Gly Ser Arg Val Pro Lys Leu Leu Glu Asp Ala	1200		
	385 390 395 400			

aat aat aat ggc ttg ttg gtg ttt ttg att gct aac gtt tta aca gga 1248
 Asn Asn Asn Gly Leu Leu Val Phe Leu Ile Ala Asn Val Leu Thr Gly
 405 410 415

gta gtt aat tta tcg ttc gac acc ctt cat tct agc aat gca aaa ggc 1296
 Val Val Asn Leu Ser Phe Asp Thr Leu His Ser Ser Asn Ala Lys Gly
 420 425 430

ttg aca atc atg act atg tat ctt ttt att att tgc tat atg gca cat 1344
 Leu Thr Ile Met Thr Met Tyr Leu Phe Ile Ile Cys Tyr Met Ala His
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 35 40 45
 Asn Leu Gly Phe Leu Val Glu Phe Phe Ile Phe Cys Leu Ile Pro Leu
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 Phe Val Ile Tyr Val Ser Ser Lys Val Gly Val Phe Thr Leu Cys Ile
 65 70 75 80
 Ala Ser Phe Leu Pro Ser Phe Val Leu His Val Ile Ser Pro Ile Asn
 85 90 95
 Trp Asp Val Leu Arg Arg Lys Pro Gly Cys Cys Leu Thr Lys Lys Asn
 100 105 110
 Glu Asn Thr Phe Asp Arg Arg Ile Ala Gly Val Thr Phe Tyr Arg Ser
 115 120 125
 Gln Met Met Leu Val Thr Val Thr Cys Ile Leu Ala Val Asp Phe Thr
 130 135 140
 Leu Phe Pro Arg Arg Tyr Ala Lys Val Glu Thr Trp Gly Thr Ser Leu
 145 150 155 160
 Met Asp Leu Gly Val Gly Ser Phe Met Phe Ser Ser Gly Thr Val Ala
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 Trp Asn Ser Phe Ile Leu Leu Ile Leu Gly Phe Ala Arg Met Phe Leu

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Trp	Asn	Phe	Phe	Phe	Thr	Leu	Gly	Phe	Met	Ala	Leu	Gly	Val	Phe	Phe
225					230					235					240
Phe	Arg	Arg	Ser	Leu	Lys	Lys	Val	Ser	Tyr	Phe	Asn	Leu	Ala	Thr	Phe
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Ile	Thr	Leu	Leu	His	His	Cys	Leu	Leu	Val	Leu	Thr	Pro	Phe	Gln	Lys
			260					265					270		
Trp	Ala	Leu	Ser	Ala	Pro	Arg	Thr	Asn	Ile	Leu	Ala	Gln	Asn	Arg	Glu
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Gly	Ile	Ala	Ser	Leu	Pro	Gly	Tyr	Ile	Ala	Ile	Tyr	Phe	Tyr	Gly	Met
	290					295					300				
Tyr	Thr	Gly	Ser	Val	Val	Leu	Ala	Asp	Arg	Pro	Leu	Met	Tyr	Thr	Arg
305					310					315					320
Ala	Glu	Ser	Trp	Lys	Arg	Phe	Gln	Arg	Leu	Leu	Phe	Pro	Leu	Cys	Ile
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Leu	Leu	Val	Leu	Tyr	Leu	Val	Ser	Asn	Phe	Leu	Ser	Val	Gly	Val	Ser
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Arg	Arg	Leu	Ala	Asn	Thr	Pro	Tyr	Val	Ala	Asn	Val	Ala	Phe	Ile	Asn
		355					360					365			
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	370					375					380				
Ser	Ser	Val	Pro	Tyr	Gly	Ser	Arg	Val	Pro	Lys	Leu	Leu	Glu	Asp	Ala
385					390					395					400
Asn	Asn	Asn	Gly	Leu	Leu	Val	Phe	Leu	Ile	Ala	Asn	Val	Leu	Thr	Gly
			405						410					415	
Val	Val	Asn	Leu	Ser	Phe	Asp	Thr	Leu	His	Ser	Ser	Asn	Ala	Lys	Gly
			420					425					430		
Leu	Thr	Ile	Met	Thr	Met	Tyr	Leu	Phe	Ile	Ile	Cys	Tyr	Met	Ala	His
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Trp	Leu	Ala	Gln	His	Gly	Ile	Arg	Phe	Arg	Leu					
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Lys Glu Ala Phe Val Ser Gly Leu Ala Gly Gly Ser Ile Leu Glu Ile	
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aac gcc gtc acc ttg gtt gct tcg gta tcc gtt ttt ctg tgg tca att	150
Asn Ala Val Thr Leu Val Ala Ser Val Ser Val Phe Leu Trp Ser Ile	
25 30 35 40	
cta caa tct cgc cta tcc ttt ttc aca ccc tac agc gcc gct gcc ctt	198
Leu Gln Ser Arg Leu Ser Phe Phe Thr Pro Tyr Ser Ala Ala Ala Leu	
45 50 55	
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Leu Val Asp Phe Leu Leu Asn Val Leu Ala Ile Leu Phe Ala Thr Thr	
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tta tac tct tcg gcg cct ctt ctt ctc aat ctc ctt cta ata tct ccc	294
Leu Tyr Ser Ser Ala Pro Leu Leu Leu Asn Leu Leu Leu Ile Ser Pro	
75 80 85	
gct ctg ctg ata ctc ctc tct acg aaa cgt cct cgg acc ccc gtc aaa	342
Ala Leu Leu Ile Leu Leu Ser Thr Lys Arg Pro Arg Thr Pro Val Lys	
90 95 100	
gcg aaa cct cct cgc cag tcc gct aga gct ggg aaa gat gac tcg aaa	390
Ala Lys Pro Pro Arg Gln Ser Ala Arg Ala Gly Lys Asp Asp Ser Lys	
105 110 115 120	
cat gcg aca gcc ttg cca gag tct cta ccc att cat cca ttt ctc acg	438
His Ala Thr Ala Leu Pro Glu Ser Leu Pro Ile His Pro Phe Leu Thr	
125 130 135	
aca tat cgc gcc gcc atg atg gtt atc acg tgc atc gct atc ttg gct	486
Thr Tyr Arg Ala Ala Met Met Val Ile Thr Cys Ile Ala Ile Leu Ala	
140 145 150	
gtg gat ttt cgc att ttt cct cgc cga ttc gcc aag gta gaa aac tgg	534
Val Asp Phe Arg Ile Phe Pro Arg Arg Phe Ala Lys Val Glu Asn Trp	
155 160 165	
ggt aca tca ctc atg gat ctg ggc gtt gga tcg ttt gtc ttt tcg ggc	582
Gly Thr Ser Leu Met Asp Leu Gly Val Gly Ser Phe Val Phe Ser Gly	
170 175 180	
gga gta gta tcc gct cgc tca cta ctc aag agc agg acc aat ggc tct	630
Gly Val Val Ser Ala Arg Ser Leu Leu Lys Ser Arg Thr Asn Gly Ser	
185 190 195 200	
aaa agg ttg cct ctt gcc aag agg ttg att gcg tcg acg cga cac tct	678
Lys Arg Leu Pro Leu Ala Lys Arg Leu Ile Ala Ser Thr Arg His Ser	
205 210 215	
att cct ctg ctc gtc ctc ggc ctg att cgg cta tac agc gtc aaa ggc	726
Ile Pro Leu Leu Val Leu Gly Leu Ile Arg Leu Tyr Ser Val Lys Gly	
220 225 230	
ttg gac tat gcg gag cac gtc acc gag tac ggc gta cat tgg aac ttc	774

Leu	Asp	Tyr	Ala	Glu	His	Val	Thr	Glu	Tyr	Gly	Val	His	Trp	Asn	Phe		
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Phe	Phe	Thr	Leu	Gly	Leu	Leu	Pro	Pro	Phe	Val	Glu	Val	Phe	Asp	Ala		
	250					255					260						
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Leu	Ala	Thr	Ile	Ile	Pro	Ser	Tyr	Glu	Val	Leu	Ser	Val	Gly	Ile	Ala		
	265				270					275					280		
gtc	ttg	tat	caa	gtt	gcc	cta	gag	tca	aca	gac	ttg	aaa	agc	tac	atc	918	
Val	Leu	Tyr	Gln	Val	Ala	Leu	Glu	Ser	Thr	Asp	Leu	Lys	Ser	Tyr	Ile		
			285						290					295			
ctc	gtc	tcc	cct	cgt	ggg	cca	agc	tta	ctg	tcc	aag	aat	cgt	gaa	ggc	966	
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Val	Phe	Ser	Phe	Ser	Gly	Tyr	Leu	Ala	Ile	Phe	Leu	Ala	Gly	Arg	Ala		
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atc	ggc	att	cgg	ata	atc	cct	cgc	gga	act	tct	ttc	tca	aga	agc	cca	1062	
Ile	Gly	Ile	Arg	Ile	Ile	Pro	Arg	Gly	Thr	Ser	Phe	Ser	Arg	Ser	Pro		
	330					335					340						
gaa	cag	gcc	agg	aga	cgg	gtc	ctg	atc	agc	ctt	ggc	gtg	caa	gcg	tta	1110	
Glu	Gln	Ala	Arg	Arg	Arg	Val	Leu	Ile	Ser	Leu	Gly	Val	Gln	Ala	Leu		
	345				350					355					360		
gtg	tgg	acc	act	ctt	ttt	gtg	ttg	aac	tcc	act	tat	gcg	atg	gga	tac	1158	
Val	Trp	Thr	Thr	Leu	Phe	Val	Leu	Asn	Ser	Thr	Tyr	Ala	Met	Gly	Tyr		
				365					370					375			
gga	gct	aat	atc	cct	gtc	tcc	cgc	cgc	ctc	gct	aac	atg	ccc	tat	gtc	1206	
Gly	Ala	Asn	Ile	Pro	Val	Ser	Arg	Arg	Leu	Ala	Asn	Met	Pro	Tyr	Val		
			380					385					390				
ctt	tgg	gtt	tcg	gcg	ttc	aac	acc	gcg	caa	ctg	ttt	gtg	ttc	tgc	ctg	1254	
Leu	Trp	Val	Ser	Ala	Phe	Asn	Thr	Ala	Gln	Leu	Phe	Val	Phe	Cys	Leu		
		395					400					405					
atc	gaa	aca	ctc	tgc	ttt	cct	gca	gtt	cat	cgg	aca	acg	act	caa	gag	1302	
Ile	Glu	Thr	Leu	Cys	Phe	Pro	Ala	Val	His	Arg	Thr	Thr	Thr	Gln	Glu		
	410					415					420						
agc	gaa	tct	gag	cga	gtc	gat	ttt	gct	acg	agc	cga	atc	atg	tcg	gcc	1350	
Ser	Glu	Ser	Glu	Arg	Val	Asp	Phe	Ala	Thr	Ser	Arg	Ile	Met	Ser	Ala		
	425				430					435					440		
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Phe	Asn	Lys	Asn	Ser	Leu	Ala	Ile	Phe	Leu	Leu	Ala	Asn	Leu	Leu	Thr		
				445					450					455			
gga	gct	gtg	aat	ctg	agc	atc	tcc	aca	att	gat	gct	aat	aca	gcg	cag	1446	
Gly	Ala	Val	Asn	Leu	Ser	Ile	Ser	Thr	Ile	Asp	Ala	Asn	Thr	Ala	Gln		
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gcc	atc	gct	gtt	ctc	att	gga	tat	tca	tcc	att	atc	aca	ggg	gtt	gct	1494	
Ala	Ile	Ala	Val	Leu	Ile	Gly	Tyr	Ser	Ser	Ile	Ile	Thr	Gly	Val	Ala		

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Val Ser Val Phe Leu Trp Ser Ile Leu Gln Ser Arg Leu Ser Phe Phe			
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Thr Pro Tyr Ser Ala Ala Ala Leu Leu Val Asp Phe Leu Leu Asn Val			
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Leu Ala Ile Leu Phe Ala Thr Thr Leu Tyr Ser Ser Ala Pro Leu Leu			
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Leu Asn Leu Leu Leu Ile Ser Pro Ala Leu Leu Ile Leu Leu Ser Thr			
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Lys Arg Pro Arg Thr Pro Val Lys Ala Lys Pro Pro Arg Gln Ser Ala			
	100	105	110
Arg Ala Gly Lys Asp Asp Ser Lys His Ala Thr Ala Leu Pro Glu Ser			
	115	120	125
Leu Pro Ile His Pro Phe Leu Thr Thr Tyr Arg Ala Ala Met Met Val			
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Ile Thr Cys Ile Ala Ile Leu Ala Val Asp Phe Arg Ile Phe Pro Arg			
145	150	155	160
Arg Phe Ala Lys Val Glu Asn Trp Gly Thr Ser Leu Met Asp Leu Gly			
	165	170	175
Val Gly Ser Phe Val Phe Ser Gly Gly Val Val Ser Ala Arg Ser Leu			
	180	185	190
Leu Lys Ser Arg Thr Asn Gly Ser Lys Arg Leu Pro Leu Ala Lys Arg			
	195	200	205
Leu Ile Ala Ser Thr Arg His Ser Ile Pro Leu Leu Val Leu Gly Leu			
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Glu Tyr Gly Val His Trp Asn Phe Phe Phe Thr Leu Gly Leu Leu Pro
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 260 265 270
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 Ser Thr Asp Leu Lys Ser Tyr Ile Leu Val Ser Pro Arg Gly Pro Ser
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 Ala Ile Phe Leu Ala Gly Arg Ala Ile Gly Ile Arg Ile Ile Pro Arg
 325 330 335
 Gly Thr Ser Phe Ser Arg Ser Pro Glu Gln Ala Arg Arg Arg Val Leu
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 Ile Ser Leu Gly Val Gln Ala Leu Val Trp Thr Thr Leu Phe Val Leu
 355 360 365
 Asn Ser Thr Tyr Ala Met Gly Tyr Gly Ala Asn Ile Pro Val Ser Arg
 370 375 380
 Arg Leu Ala Asn Met Pro Tyr Val Leu Trp Val Ser Ala Phe Asn Thr
 385 390 395 400
 Ala Gln Leu Phe Val Phe Cys Leu Ile Glu Thr Leu Cys Phe Pro Ala
 405 410 415
 Val His Arg Thr Thr Thr Gln Glu Ser Glu Ser Glu Arg Val Asp Phe
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 Ala Thr Ser Arg Ile Met Ser Ala Phe Asn Lys Asn Ser Leu Ala Ile
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 Phe Leu Leu Ala Asn Leu Leu Thr Gly Ala Val Asn Leu Ser Ile Ser
 450 455 460
 Thr Ile Asp Ala Asn Thr Ala Gln Ala Ile Ala Val Leu Ile Gly Tyr
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Glu Ala Phe Val Ser Gly Leu Ala Gly Gly Ser Ile Leu Glu Ile Asn
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gcc gtc acc ttg gtt gct tcg gttcgtgtta ctatcttatt gtggctactt 151
Ala Val Thr Leu Val Ala Ser
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cgccctacatt gtttctcgac taaccgagtc tcttttgcgat caatcag gta tcc gtt 207
                               Val Ser Val
                               35

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Phe Leu Trp Ser Ile Leu Gln Ser Arg Leu Ser Phe Phe Thr Pro Tyr
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Ser Ala Ala Ala Leu Leu Val Asp Phe Leu Leu Asn Val Leu Ala Ile
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ttg ttc gca acc act tta tac tct tcg gcg cct ctt ctt ctc aat ctc 351
Leu Phe Ala Thr Thr Leu Tyr Ser Ser Ala Pro Leu Leu Leu Asn Leu
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Leu Leu Ile Ser Pro Ala Leu Leu Ile Leu Leu Ser Thr Lys Arg Pro
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cgg acc ccc gtc aaa gcg aaa cct cct cgc cag tcc gct aga gct ggg 447
Arg Thr Pro Val Lys Ala Lys Pro Pro Arg Gln Ser Ala Arg Ala Gly
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aaa gat gac tcg aaa cat gcg aca gcc ttg cca gag tct cta ccc att 495
Lys Asp Asp Ser Lys His Ala Thr Ala Leu Pro Glu Ser Leu Pro Ile
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cat cca ttt ctc acg aca tat cgc gcc gcc atg atg gtt atc acg tgc 543
His Pro Phe Leu Thr Thr Tyr Arg Ala Ala Met Met Val Ile Thr Cys
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atc gct atc ttg gct gtg gat ttt cgc att ttt cct cgc cga ttc gcc 591
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          150                               155                               160

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Lys Val Glu Asn Trp Gly Thr Ser Leu Met Asp Leu Gly Val Gly Ser
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Phe Val Phe Ser Gly Gly Val Val Ser Ala Arg Ser Leu Leu Lys Ser	
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Arg Thr Asn Gly Ser Lys Arg Leu Pro Leu Ala Lys Arg Leu Ile Ala	
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tgc acg cga cac tct att cct ctg ctc gtc ctc ggc ctg att cgg cta	783
Ser Thr Arg His Ser Ile Pro Leu Leu Val Leu Gly Leu Ile Arg Leu	
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Tyr Ser Val Lys Gly Leu Asp Tyr Ala Glu His Val Thr Glu Tyr Gly	
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Val His Trp Asn Phe Phe Phe Thr Leu Gly Leu Leu Pro Pro Phe Val	
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Glu Val Phe Asp Ala Leu Ala Thr Ile Ile Pro Ser Tyr Glu Val Leu	
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Phe Ser Arg Ser Pro Glu Gln Ala Arg Arg Arg Val Leu Ile Ser Leu	
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Gly Val Gln Ala Leu Val Trp Thr Thr Leu Phe Val Leu Asn Ser Thr	
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Tyr Ala Met Gly Tyr Gly Ala Asn Ile Pro Val Ser Arg Arg Leu Ala	
375 380 385	
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Asn Met Pro Tyr Val Leu Trp Val Ser Ala Phe Asn Thr Ala Gln Leu	
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Phe Val Phe Cys Leu Ile Glu Thr Leu Cys Phe Pro Ala Val His Arg	
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 Ala Asn Thr Ala Gln Ala Ile Ala Val Leu Ile Gly Tyr Ser Ser Ile
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 Ile Thr Gly Val Ala Leu Ala Leu His His Ala Asn Ile Lys Val Leu
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 5 10 15 20

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 Trp Ser Ile Asn Ala Val Ser Leu Val Ala Leu
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 Ala Thr Tyr Ala
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Leu Trp Ile Ala Leu Ser Pro Tyr Ile Arg His Gly Leu Leu Asn Asn	
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Tyr Leu Ile Cys Val Leu Pro Leu Leu Phe Gly Val Thr Ile Phe Ser	
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Thr Ser Pro Leu Val Phe Thr Ser Phe Leu Ser Ile Ile Ser Leu Ala	
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Leu Leu Pro Ser Gln Val Ala Phe Ala Ser Gly Ser Leu Leu Ser Pro	
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Asp Pro Thr Thr Ser Pro Met Ser Pro Ser Ser Ser Ser Ala Ser Gly	
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His Glu Asp Pro Leu Gly Ile Met Gly Val Asn Arg Arg Arg Ser Leu	
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Leu Glu Gly Val Ser Leu Asp Val Pro Ser His Ile Asp Ser Lys Val	
180 185 190 195	
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Arg Ile Ser Pro Val Pro Tyr Leu Arg Leu Lys Lys Ser Arg Ala Thr	
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Lys Ala Gln Trp Val Lys Glu Lys Gly Arg Leu Pro Phe Leu Thr Val	
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Tyr Arg Ala His Met Met Leu Met Thr Val Ile Cys Ile Leu Ala Val	
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Asp Phe Glu Val Phe Pro Arg Trp Gln Gly Lys Cys Glu Asp Phe Gly	
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act agt ctg gtaagctttc cttcagccat ggtccagtgc tcaccgctct	931
Thr Ser Leu	
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265 270 275

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295 300 305

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310 315 320

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325 330 335

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360 365 370

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Arg Trp Ser Val Leu Gly Val Ile Ile Ser Leu Leu His Gln Leu Trp
375 380 385

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405 410 415

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420 425 430 435

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Ser Leu Pro Pro Arg Arg Glu Arg Val Val Ser Glu Thr Asn Glu Glu
440 445 450

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His Glu Gln Ser His Phe Glu Arg Lys Lys Leu Asp Leu Ile Met Glu
455 460 465

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Leu Ile Gly Tyr Ser Leu Gly Trp Trp Ala Leu Leu Gly Gly Trp Ile
470 475 480

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Trp Ala Gly Gly Glu Val Ser Arg Arg Leu
485 490

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Trp Val Ala Ala Tyr Asn Thr Thr Phe Leu Leu Gly Tyr Leu Leu Leu								
	505						515	
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Thr Met Tyr Ala Pro Ala Trp Leu Ser Met Gly Val Leu Met Leu Tyr								
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Thr Leu Thr Ile Ser Cys Val Gly Trp Ile Leu Lys Gly Arg Arg Ile								
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Gly Ala Ser Ile Trp Ser Ile Asn Ala Val Ser Leu Val Ala Leu Ala																	
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Thr Tyr Ala Leu Trp Ile Ala Leu Ser Pro Tyr Ile Arg His Gly Leu																	
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Leu Asn Asn Tyr Leu Ile Cys Val Leu Pro Leu Leu Phe Gly Val Thr																	
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Ile Phe Ser Thr Ser Pro Leu Val Phe Thr Ser Phe Leu Ser Ile Ile																	
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Ser Pro Glu Lys Pro Lys Gly Gln Trp Leu Asp Glu Ser Asp Ser Asp	
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Glu Glu Pro Ala Glu Pro Ala Ser Ala Ala Gly Ser Ala Ala Val Ser	
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Pro Val Lys Leu Leu Pro Ser Gln Val Ala Phe Ala Ser Gly Ser Leu	
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145 150 155 160	
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Ala Ser Gly His Glu Asp Pro Leu Gly Ile Met Gly Val Asn Arg Arg	
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Ser Lys Val Arg Ile Ser Pro Val Pro Tyr Leu Arg Leu Lys Lys Ser	
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Leu Ala Val Asp Phe Glu Val Phe Pro Arg Trp Gln Gly Lys Cys Glu	
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Ser Leu Gly Leu Val Ser Thr Lys Ser Leu Ser Pro Pro Pro Pro Thr	
275 280 285	
cct acg ccc tcc tcg ccc gct ctc aac tct cac atc att ccc ctc acc	912
Pro Thr Pro Ser Ser Pro Ala Leu Asn Ser His Ile Ile Pro Leu Thr	
290 295 300	
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tat Tyr	cct Pro	gag Glu	cat His 340	gtg Val	acg Thr	gag Glu	tac Tyr	ggc Gly 345	gtg Val	cac His	tgg Trp	aat Asn	ttc Phe	ttc Phe	ttc Phe	1056
acc Thr	ctc Leu	gca Ala 355	ttg Leu	gtt Val	cct Pro	gtg Val	ctc Leu	gcc Ala 360	gtg Val	ggc Gly	att Ile	cga Arg	cca Pro	ttg Leu	acg Thr	1104
cag Gln	tgg Trp	ctt Leu	cgc Arg	tgg Trp	agt Ser	gtg Val	ctt Leu	ggg Gly	gta Val	atc Ile	atc Ile	tct Ser	ttg Leu	ctg Leu	cat His	1152
cag Gln 385	ctg Leu	tgg Trp	tta Leu	aca Thr	tat Tyr 390	tat Tyr	ctc Leu	caa Gln	tcc Ser	atc Ile 395	gtc Val	ttc Phe	tca Ser	ttc Phe	ggc Gly 400	1200
cgg Arg	tca Ser	ggt Gly	atc Ile	ttt Phe 405	cta Leu	gca Ala	aac Asn	aag Lys	gaa Glu 410	ggc Gly	ttc Phe	tcc Ser	tct Ser	ctt Leu	cct Pro 415	1248
ggc Gly	tat Tyr	ctt Leu	tcc Ser 420	ata Ile	ttt Phe	ttg Leu	atc Ile	ggc Gly 425	ttg Leu	tct Ser	att Ile	gga Gly	gat Asp	cat His	gtt Val	1296
tta Leu	agg Arg	ctc Leu	agt Ser	tta Leu	cca Pro	cca Pro	aga Arg	aga Arg	gag Glu	agg Arg	gtc Val	gtg Val	tca Ser	gaa Glu	aca Thr	1344
aat Asn 450	gaa Glu	gag Glu	cat His	gag Glu	cag Gln	agt Ser	cat His	ttt Phe	gag Glu	aga Arg	aaa Lys	aaa Lys	ttg Leu	gat Asp	ttg Leu	1392
att Ile 465	atg Met	gag Glu	ttg Leu	att Ile	gga Gly	tat Tyr	agc Ser	tta Leu	ggc Gly	tgg Trp	tgg Trp	gca Ala	ctc Leu	tta Leu	gga Gly 480	1440
ggc Gly	tgg Trp	att Ile	tgg Trp	gcc Ala 485	ggc Gly	ggg Gly	gag Glu	gta Val	tcc Ser	agg Arg	cgt Arg	tta Leu	gcc Ala	aac Asn	gct Ala 495	1488
cct Pro	tat Tyr	gta Val	ttt Phe	tgg Trp	gta Val	gcg Ala	gca Ala	tac Tyr	aat Asn	acc Thr	acc Thr	ttt Phe	ctc Leu	ctc Leu	ggc Gly	1536
tac Tyr	ctc Leu	ctc Leu	ctt Leu	acc Thr	cac His	att Ile	att Ile	cca Pro	tct Ser	ccc Pro	acc Thr	tct Ser	tcc Ser	caa Gln	aca Thr	1584
tca Ser 530	cca Pro	tcg Ser	atc Ile	tta Leu	gtg Val	cct Pro	ccc Pro	ttg Leu	ctc Leu	gac Asp	gct Ala	atg Met	aat Asn	aaa Lys	aac Asn	1632
ggc Gly	ctc Leu	gcg Ala	ata Ile	ttt Phe	ttg Leu	gcg Ala	gcc Ala	aac Asn	ttg Leu	ctt Leu	aca Thr	gga Gly	ctg Leu	gtg Val	aat Asn	1680

545	550	555	560	
gtg agc atg aag aca atg tat gcg ccg gcg tgg ttg tca atg ggg gtg				1728
Val Ser Met Lys Thr Met Tyr Ala Pro Ala Trp Leu Ser Met Gly Val				
	565	570	575	
tta atg ttg tat acc ttg aca atc agt tgt gta ggg tgg ata ctg aaa				1776
Leu Met Leu Tyr Thr Leu Thr Ile Ser Cys Val Gly Trp Ile Leu Lys				
	580	585	590	
gga cgg agg atc aag ata tag				1797
Gly Arg Arg Ile Lys Ile				
	595			

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 <211> 598
 <212> PRT
 <213> *Cryptococcus neoformans*

<400> 14
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 20 25 30
 Thr Tyr Ala Leu Trp Ile Ala Leu Ser Pro Tyr Ile Arg His Gly Leu
 35 40 45
 Leu Asn Asn Tyr Leu Ile Cys Val Leu Pro Leu Leu Phe Gly Val Thr
 50 55 60
 Ile Phe Ser Thr Ser Pro Leu Val Phe Thr Ser Phe Leu Ser Ile Ile
 65 70 75 80
 Ser Leu Ala Phe Ile Thr Lys Ser Gln Lys Cys Phe Lys Ser Val Ser
 85 90 95
 Ser Pro Glu Lys Pro Lys Gly Gln Trp Leu Asp Glu Ser Asp Ser Asp
 100 105 110
 Glu Glu Pro Ala Glu Pro Ala Ser Ala Ala Gly Ser Ala Ala Val Ser
 115 120 125
 Pro Val Lys Leu Leu Pro Ser Gln Val Ala Phe Ala Ser Gly Ser Leu
 130 135 140
 Leu Ser Pro Asp Pro Thr Thr Ser Pro Met Ser Pro Ser Ser Ser Ser
 145 150 155 160
 Ala Ser Gly His Glu Asp Pro Leu Gly Ile Met Gly Val Asn Arg Arg
 165 170 175
 Arg Ser Leu Leu Glu Gly Val Ser Leu Asp Val Pro Ser His Ile Asp
 180 185 190
 Ser Lys Val Arg Ile Ser Pro Val Pro Tyr Leu Arg Leu Lys Lys Ser
 195 200 205
 Arg Ala Thr Lys Ala Gln Trp Val Lys Glu Lys Gly Arg Leu Pro Phe

210	215	220
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Leu Ala Val Asp Phe Glu Val Phe Pro Arg Trp Gln Gly Lys Cys Glu 245 250 255		
Asp Phe Gly Thr Ser Leu Met Asp Val Gly Val Gly Ser Phe Val Phe 260 265 270		
Ser Leu Gly Leu Val Ser Thr Lys Ser Leu Ser Pro Pro Pro Pro Thr 275 280 285		
Pro Thr Pro Ser Ser Pro Ala Leu Asn Ser His Ile Ile Pro Leu Thr 290 295 300		
Pro Ser Pro Phe Thr Ser Ile Leu Ile Ser Leu Arg Lys Ser Ile Pro 305 310 315 320		
Ile Leu Val Leu Gly Phe Ile Arg Leu Ile Met Val Lys Gly Ser Asp 325 330 335		
Tyr Pro Glu His Val Thr Glu Tyr Gly Val His Trp Asn Phe Phe Phe 340 345 350		
Thr Leu Ala Leu Val Pro Val Leu Ala Val Gly Ile Arg Pro Leu Thr 355 360 365		
Gln Trp Leu Arg Trp Ser Val Leu Gly Val Ile Ile Ser Leu Leu His 370 375 380		
Gln Leu Trp Leu Thr Tyr Tyr Leu Gln Ser Ile Val Phe Ser Phe Gly 385 390 395 400		
Arg Ser Gly Ile Phe Leu Ala Asn Lys Glu Gly Phe Ser Ser Leu Pro 405 410 415		
Gly Tyr Leu Ser Ile Phe Leu Ile Gly Leu Ser Ile Gly Asp His Val 420 425 430		
Leu Arg Leu Ser Leu Pro Pro Arg Arg Glu Arg Val Val Ser Glu Thr 435 440 445		
Asn Glu Glu His Glu Gln Ser His Phe Glu Arg Lys Lys Leu Asp Leu 450 455 460		
Ile Met Glu Leu Ile Gly Tyr Ser Leu Gly Trp Trp Ala Leu Leu Gly 465 470 475 480		
Gly Trp Ile Trp Ala Gly Gly Glu Val Ser Arg Arg Leu Ala Asn Ala 485 490 495		
Pro Tyr Val Phe Trp Val Ala Ala Tyr Asn Thr Thr Phe Leu Leu Gly 500 505 510		
Tyr Leu Leu Leu Thr His Ile Ile Pro Ser Pro Thr Ser Ser Gln Thr 515 520 525		
Ser Pro Ser Ile Leu Val Pro Pro Leu Leu Asp Ala Met Asn Lys Asn		

530

535

540

Gly Leu Ala Ile Phe Leu Ala Ala Asn Leu Leu Thr Gly Leu Val Asn
 545 550 555 560

Val Ser Met Lys Thr Met Tyr Ala Pro Ala Trp Leu Ser Met Gly Val
 565 570 575

Leu Met Leu Tyr Thr Leu Thr Ile Ser Cys Val Gly Trp Ile Leu Lys
 580 585 590

Gly Arg Arg Ile Lys Ile
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<210> 15

<211> 35

<212> DNA

<213> Artificial sequence

<220>

<223> Description of Artificial Sequence:an artificially
 synthesized primer sequence

<400> 15

ggaattcatg tcgactttaa aacagagaaa agagg

35

<210> 16

<211> 39

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<223> Description of Artificial Sequence:an artificially
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39

<210> 17

<211> 60

<212> DNA

<213> Saccharomyces cerevisiae

<400> 17

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<211> 60

<212> DNA

<213> Saccharomyces cerevisiae

<400> 18

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